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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/668,833	09/23/2003	Michael T. Rowan	66281.000002	4989
21967	7590	05/09/2006	EXAMINER	
HUNTON & WILLIAMS LLP INTELLECTUAL PROPERTY DEPARTMENT 1900 K STREET, N.W. SUITE 1200 WASHINGTON, DC 20006-1109			GU, SHAWN X	
			ART UNIT	PAPER NUMBER
			2189	
DATE MAILED: 05/09/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/668,833	<b>Applicant(s)</b> ROWAN ET AL.	
	<b>Examiner</b> Shawn Gu	<b>Art Unit</b> 2189	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 21 March 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 September 2003 and 19 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Response to Amendment***

1. This final Office action is in response to the amendment filed on 21 March 2006. Claims 1-29 are pending. All objections and rejections not repeated below are withdrawn.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 24 and 25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As for claims 24 and 25, the limitation "the point in time" lacks sufficient antecedent basis. The Examiner is unable to determine which point in time is being referred to in the claims. As a result the Examiner rejected the claims by interpreting "point in time" as any point in time. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-10, 13-15 and 23-25 are rejected under U.S.C. 102(e) as being anticipated by Green et al. [US 2003/0167380 A1] (hereinafter "Green").

As for claim 1, Green teaches a storage management system for backing up digital content of a storage system comprising a plurality of units of storage (Figs 3, 4, 6a, 6b, Volume Granules; and Cache Granules), wherein the storage management system comprises:

at least one data store (the combination of Disk A 4410, Disk B 4412 and Disk C 4414 in Fig 44);

wherein the storage management system automatically intercepts write commands (see Fig 3, Write to Volume Commands 320) issued to the plurality of units of storage, each write command comprising an instruction (program code, see Pg. 1, Para. [0002]) to overwrite at least one unit of storage with new data; and

wherein the storage management system copies, prior to execution of each write command, old data present at the at least one unit of storage into the at least one data store, wherein a record of the old data is timestamped (copy-on-write process, see Pg. 5, Para. [0066]-[0068], when the write command consists of new data that overwrites data in the Current Volume that belongs to a previous snapshot, the overwritten data is

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copied and timestamped in a snapshot cache; see Fig 3, 630 Volume Granules, 340 Cache Granules, and Figs 6a and 6b; the snapshot cache is part of the Cache Data portions in Disk A 4410 and Disk C 4414 in Fig 44).

As for claim 14, it is clear the method of the claim is already substantially disclosed in claim 1 and must be performed by claim 1's storage management system, the claim also includes a data store (see Fig 44, Disk A 4410). Green further teaches digital content of the storage system can be accessed by specifying an address and a time to access the most recent data stored on the storage device at the address at or before the time (Restoration of System to Another State, see Figs 19, 24, and see Fig 40, "Volumes" and "Date and time"; and Pg.12, Para. [0145]-[0148]).

As for claim 23, it is clear the claim is already substantially discloses as described above in claims 1 and 14. The claim also includes a data store (see Fig 44, Disk A 4410). Green further teaches a computer readable medium (see Fig 1, System Memory) having the code (see Fig 2, 210 Operating System, 220 PSM; and Pg. 1, Para. [0002]) performing the limitations of this claim.

As for claim 2, Green teaches the storage system further comprises one or more physical storage devices (Figure 44, 4410 Disk A, 4412 Disk B, 4414 Disk C; Pg. 12-13, Para. [0154] and [0155]) on which the digital content of the storage system is stored.

As for claims 3 and 15, Green teaches an address for accessing the storage system comprises a device identifier (Pg. 12, Para. [0154] and [0155]; Figure 44, 4410 Disk A, 4412 Disk B, 4414 Disk C; the system must be able to identify the disk which contains the requested snapshot) and a location identifier (the system must be able to address the location of the snapshot on the disk it is residing in order to retrieve it).

As for claim 4, Green teaches the device identifier identifies a physical storage device (Pg. 12, Para. [0154] and [0155]; Figure 44, 4410 Disk A, 4412 Disk B, 4414 Disk C; the system must be able to identify the disk which contains the requested snapshot).

As for claim 5, Green teaches the device identifier identifies a logical device (Pg. 12, Para 0148; Fig 40; the snapshot must be identified in order for the system to restore to that state).

As for claim 6, Green teaches the digital content of the storage system can be access by specifying an address and a time, and the time specifies that the digital data retrieved from the address is the most recent digital data that was written to the address at or before the time (Fig 3, 330 Volume Granules and 340 Cache Granules; Fig 40; Pg. 12, Para. 12; restoration of the system to a state in which it existed at a particular time; see Restoration of System to Another State, see Figs 19, 24, and see Fig 40, "Volumes" and "Date and time"; and Pg.12, Para.[0145]-[0148]; also see claim 14).

As for claim 7, Green teaches the time is explicitly specified in a request to access a unit of storage (Fig 40, "Date and time").

As for claim 8, Green teaches the time is specified in a command to the storage system separate from a request to read a unit of storage (Fig 39 and Fig 40, the user interface allows the user to specify the time using the Timestamps, and only request the read after the user selects "OK", thereby separating the command and the request).

As for claim 9, Green teaches the storage management system creates a virtual device (snapshot, Pg. 12, Para. [0148]), wherein the time is specified when the virtual device is created (Pg. 5, Para. [0061]; Pg. 12, Para. [0148]), and is applied when the virtual device is accessed (Pg. 12, Para. [0148]; Fig 40).

As for claim 10, Green teaches new data is written to the virtual device without overwriting data that was written to the storage system after the time specified when the virtual device was created (a snapshot only stores data that were present in the storage system before or at the time when it was created, see Fig 3, and Pg.5, Para. [0065]-[0068]).

As for claim 13, Green teaches the units of storage are blocks (Fig 6a, rows 1-4 in 330 Volume Granules; Pg. 4, Para. [0057]).

As for claim 24, Green teaches the storage device command is a write command (Creating and deleting snapshots, see Figs 15, 20, 22) and the point in time is a current time.

As for claim 25, is it clear the claim is already substantially disclosed as described above (see claim 14).

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 11, 12 and 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Green, in further view of "UNIX in a Nutshell" [Daniel Gilly and the staff of O'Reilly & Associates, Inc] (hereinafter "Gilly").

As for claims 11 and 16-18, Green already substantially discloses the claims as described above, but does not clearly state that a command to the storage system specifies that the time is implicitly a current time. However, Gilly teaches a "cal"



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command in the UNIX operating system (Pg. 2-10), wherein a calendar for the current month is displayed to the user when the command is sent to the system with no arguments, thereby implicitly specifying the current time as the default argument. It is clear that implicitly providing the current time as the default when accessing a system wherein time is a necessary argument simplifies the command syntax and increases the user-friendliness of the system since the current time is one of the most frequently used time in such commands, and therefore it would have been obvious to one ordinarily skilled in the art at the time of the applicant's invention to incorporate the feature in Gilly's "cal" command into Green's command in order to simplify command syntax and increase user-friendliness of the Green's system.

As for claims 12 and 20, Green already substantially discloses the claims as described above, but does not specifically state that the time is specified relative to the current time. However, Gilly teaches a "find" command in the UNIX operating system (Pg. 2-47 and 2-48), wherein a time relative to the current time is specified as an argument to access data. It is clear that specifying a time relative to the current time when accessing data provides a useful condition for the user to restrict the access to a certain group of data without knowing the exact time value, thereby increasing the user-friendliness of the command and the system. Therefore it would have been obvious to one ordinarily skilled in the art at the time of the applicant's invention to incorporate the feature in Gilly's "find" command into Green's command in order to increase user-friendliness of the Green's system.

As for claim 19, Green teaches the method further comprises writing data to the virtual storage device (Pg. 5, Para. 0061; Fig 3, 340 Cache Granules).

8. Claims 21, 22 and 26-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Green, in further view of Applicant's Admitted Prior Art (hereinafter "AAPA").

As for claim 21, it is clear that the apparatus of the claim is already substantially disclosed as described above in claims 1, 6, 9, 14 and 23 by Green, which further teaches a storage appliance (see Fig 44, PSM Controller 4404) that interfaces with a computer, and at least one current store (see Figs 6a and 6b, Current Volume Data 635, Fig 44, Volume Data in 4410 Disk A, which comprises Figure 2, 242 Primary Volume; Pg.4, Para. [0050]-[0051]) and at least one time store (Fig 44, Cache Data in 4410 Disk A; which comprises Fig 2, 244 Cache and Fig 3, 340 Cache Granule and Snapshots; Fig 6a and Fig 6b, Snapshot Caches) comprised within the storage appliance.

Although Green does not specifically teach that the at least one current store maintaining a current mirror copy of digital content in the one or more physical storage devices, AAPA does disclose that mirroring is a primary approach for data protection and recovery (see AAPA, Pg. 1, Para. [0004] and [0006]). Therefore it would have been obvious to one ordinarily skilled in the art at the time of the Applicant's invention to

utilize Disk A 4410 (see Fig 44) to provide mirroring and maintain mirror copy of the data in Disk B 4412 and Disk C 4414, or vice versa, for data protection and data recovery.

As for claim 22, it is clear the claim is already substantially disclosed by claims 21 and 23 as described above.

As for claim 26, Green further teaches the at least one data store comprises a first data store (see Fig 44, Disk A 4410) and a second data store (combination of Disk B 4412 and Disk C 4414), and wherein the first data store maintains a current mirror copy of digital data stored in the plurality of units of storage, and wherein the second data store contains the old data and the timestamped record of the old data (see claim 21's rejection argument).

As for claim 27, Green further teaches that after the old data is copied to the second data store, the at least one unit of storage is overwritten with the new data (copy-on-write process, see Pg. 5, Para. [0066]-[0068], see description in claim 1), and the current mirror copy in the first data store is updated with the new data (since Disk A is a mirror copy of Disks B and C, Disk A has to be updated with the new data in order to maintain a mirror copy).

As for claims 28 and 29, it is clear the claims are already substantially disclosed as described in claims 26 and 27, except in claims 28 and 29 the second data store (see Fig 44, combination of Disk B 4412 and Disk C 4414) is used for mirroring.

### ***Response to Arguments***

9. Applicant's arguments with respect to claims 1-29 have been considered but are moot in view of the new ground(s) of rejection. The newly added limitations are taught by Green [US 2003/0167380 A1], in further view of Gilly and AAPA, as set forth above.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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### ***Conclusion***

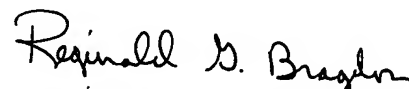
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shawn Gu whose telephone number is (571) 272-0703. The examiner can normally be reached on 9am-5pm, Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Reginald Bragdon can be reached on (571) 272-4204. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Shawn X Gu  
Patent Examiner  
Art Unit 2189



REGINALD G. BRAGDON  
PRIMARY EXAMINER

1 May 2006